

REMARKS

Reconsideration and allowance of this application is respectfully requested. Claims 1-36 are now pending in the present application. Claim 36 is allowed. Claim 11 is objected to. Claims 1-10 and 12-35 are rejected. Applicants submit that this application is in condition for allowance and such action is earnestly requested. Each of the Examiner's reasons for rejection is addressed below for the claims that are still pending.

Rejections

35 U.S.C. § 103

Claims 1, 7-10, 12 and 14-15

Claims 1, 7-10, 12 and 14-15 are rejected under 35 U.S.C. § 103(a) as being unpatentable over US Patent No.5,080,467 to Kahn et al. ("Kahn") in view of U.S. Patent No. 7,138,973 to Okafuji et al. ("Okafuji"). Applicants respectfully submit that these claims are patentable over Kahn in view of Okafuji.

Kahn fails to teach or suggest "applying a first voltage to the conductors" as recited in claim 1. The Examiner asserted that this limitation is satisfied by "the voltage waveform applied to 34 and 36 in fig. 2." Kahn discloses that "[A]lternatively, one or both electrodes 34 and 36 may include light absorbing material" (col. 6, lines 39-41). In fact, Kahn clearly discloses that "[I]n this arrangement [of FIG. 2] a pulse of optical energy, *as opposed to electrical energy* used in the prior art, is incident upon a liquid crystal cell 30" (col. 5, lines 27-29, emphasis added). This is not the same as "applying a first voltage to the conductors." Thus, Kahn fails to teach or suggest "applying a first voltage to the conductors."

Kahn fails to teach or suggest "exposing the liquid crystal display to the image wise pattern of light" as recited in claim 1. The Examiner asserted that this limitation is "clear from fig. 2." However, Kahn clearly discloses that "[T]he optical energy is generated by a lamp 42" (col. 5, lines 29-30) and that "[T]his flash tube 42 is used because it provides an intense, short, *spatially uniform optical beam*" (col. 6, lines 8-10, emphasis added) or pulse that is absorbed by the liquid crystal 32 such that when the liquid crystal cools subsequent to the pulse, uniform texture of scattering centers are formed (col. 5, lines 32-39). This preconditioning of the medium enhances the display by providing a dark uniform background. Indeed, Kahn discloses that "[T]his invention relates to improved methods and apparatus for creating *uniform* image backgrounds" (col. 1, lines 59-60, emphasis added). This process is independent of imaging and

does not involve an “image wise *pattern* of light.” Thus, Kahn fails to teach or suggest “exposing the liquid crystal display to the image wise pattern of light.”

Kahn fails to teach or suggest “a light absorbing layer for forming an image wise thermal pattern in response to an image wise pattern of light.” The Examiner asserted that this limitation is satisfied by “a light absorbing layer (35 and 37 in fig. 2; col. 6, lines 39-44) for forming an image wise thermal pattern (col. 5, lines 33-38) in response to an image wise pattern of light (42 in fig. 2; col. 5, lines 29-32).” As noted above, Kahn discloses that “[T]his invention relates to improved methods and apparatus for creating *uniform* image backgrounds” (col. 1, lines 59-60, emphasis added) and does not teach or suggest an “image wise pattern of light.” Creating a uniform background using a uniform optical pulse as shown in Figure 2 is not the same as the “forming an image wise thermal *pattern*” as recited in the present claims. Thus, Kahn fails to teach or suggest “a light absorbing layer for forming an image wise thermal pattern in response to an image wise pattern of light.”

Okafuji fails to cure the deficiencies of Kahn with respect to claim 1. Okafuji fails to teach or suggest “applying a first voltage to the conductors.” The Examiner pointed to “V1 in the first non-active region in fig. 6” and conductors “24 and 26 in fig. 3” as satisfying this limitation. However, claim 1 also requires “a layer of cholesteric liquid crystal material disposed between a pair of *unpatterned* conductors” (emphasis added). Okafuji clearly discloses that the electrodes include “row electrodes 24, and column electrodes 26” (col. 1, lines 50-51) which are not the same as “a pair of unpatterned conductors.” Thus, Okafuji fails to teach or suggest “applying a first voltage to the conductors.”

Okafuji also fails to teach or suggest “exposing the liquid crystal display to the image wise pattern of light.” Okafuji further fails to teach or suggest “a light absorbing layer for forming an image wise thermal pattern in response to an image wise pattern of light.”

Thus, Applicants respectfully submit that claim 1 is patentable over Kahn in view of Okafuji. Claims 7-10, 12 and 14-15 are patentable over Kahn in view of Okafuji, at least by their dependency on claim 1 for the same reasons as outlined above.

Claims 1, 5-8, 12-13, 16, 26, 28-29

Claims 1, 5-8, 12-13, 16, 26, 28-29 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Kahn in view of U.S. Patent No. 6,154,190 to Yang et al. (“Yang”). Applicants respectfully submit that these claims are patentable over Kahn in view of Yang.

Claims 1, 5-8, 12-13, 16

As discussed above, Kahn fails to teach or suggest “applying a first voltage to the conductors” as recited in claim 1.

Also as discussed above, Kahn fails to teach or suggest “exposing the liquid crystal display to the image wise pattern of light” as recited in claim 1. Further as discussed above, Kahn fails to teach or suggest “a light absorbing layer for forming an image wise thermal pattern in response to an image wise pattern of light.”

Yang fails to cure the deficiencies of Kahn with respect to claim 1. Yang fails to teach or suggest “applying a first voltage to the conductors.” The Examiner asserted that Yang discloses “applying a first RMS (fig. 15) voltage (V_p in fig. 21a) to conductors (162 and 182 in fig. 2b)” to satisfy this limitation. However, claim 1 also requires “a layer of cholesteric liquid crystal material disposed between a pair of *unpatterned* conductors” (emphasis added). Yang clearly discloses that the electrodes are “arrays of electrodes coupled to a circuit” (col. 8, lines 19-20) and “electrodes 162 and 182a, 182b coated as lines onto the substrates” (col. 8, lines 64-65), which are not the same as “a pair of unpatterned conductors.” Thus, Yang fails to teach or suggest “applying a first voltage to the conductors.”

Yang also fails to teach or suggest “exposing the liquid crystal display to the image wise pattern of light.” Yang further fails to teach or suggest “a light absorbing layer for forming an image wise thermal pattern in response to an image wise pattern of light.”

Thus, Applicants respectfully submit that claim 1 is patentable over Kahn in view of Yang. Claims 5-8, 12-13, 16 are patentable over Kahn in view of Yang, at least by their dependency on claim 1 for the same reasons as outlined above.

Claims 26, 28-29

Kahn fails to teach or suggest a “means for applying a first voltage to the conductors” as recited in claim 26. The Examiner asserted that this limitation is satisfied by “the voltage waveform applied to 34 and 36 in fig. 2.” Kahn discloses that “[A]lternatively, one or both electrodes 34 and 36 may include light absorbing material” (col. 6, lines 39-41). In fact, Kahn clearly discloses that “[I]n this arrangement [of FIG. 2] a pulse of optical energy, *as opposed to electrical energy* used in the prior art, is incident upon a liquid crystal cell 30” (col. 5, lines 27-29, emphasis added). This is not the same as a “means applying a first voltage to the conductors.” Thus, Kahn fails to teach or suggest a “means for applying a first voltage to the conductors.”

Kahn fails to teach or suggest a “means for exposing the liquid crystal display to the image wise pattern of light” as recited in claim 26. The Examiner asserted that this limitation is “clear from fig. 2.” However, Kahn clearly discloses that “[T]he optical energy is generated by a lamp 42” (col. 5, lines 29-30) and that “[T]his flash tube 42 is used because it provides an intense, short, *spatially uniform optical beam*” (col. 6, lines 8-10, emphasis added) or pulse that is absorbed by the liquid crystal 32 such that when the liquid crystal cools subsequent to the pulse, uniform texture of scattering centers are formed (col. 5, lines 32-39). This preconditioning of the medium enhances the display by providing a dark uniform background. Indeed, Kahn discloses that “[T]his invention relates to improved methods and apparatus for creating *uniform* image backgrounds” (col. 1, lines 59-60, emphasis added). This process is independent of imaging and does not involve an “image wise *pattern* of light.” Thus, Kahn fails to teach or suggest a “means for exposing the liquid crystal display to the image wise pattern of light.”

Kahn fails to teach or suggest “a light absorbing layer for forming an image wise thermal pattern in response to an image wise pattern of light.” The Examiner asserted that this limitation is satisfied by “a light absorbing layer (35 and 37 in fig. 2; col. 6, lines 39-44) for forming an image wise thermal pattern (col. 5, lines 33-38) in response to an image wise pattern of light (42 in fig. 2; col. 5, lines 29-32).” As noted above, Kahn discloses that “[T]his invention relates to improved methods and apparatus for creating *uniform* image backgrounds” (col. 1, lines 59-60, emphasis added) and does not teach or suggest an “image wise pattern of light.” Creating a uniform background using a uniform optical pulse as shown in Figure 2 is not the same as the “forming an image wise thermal *pattern*” as recited in the present claims. Thus, Kahn fails to teach or suggest “a light absorbing layer for forming an image wise thermal pattern in response to an image wise pattern of light.”

Yang fails to cure the deficiencies of Kahn with respect to claim 26. Yang fails to teach or suggest a “means for applying a first voltage to the conductors.” The Examiner asserted that Yang discloses “means for applying a first RMS (fig. 15) voltage (V_p in fig. 21a) to conductors (162 and 182 in fig. 2b)” to satisfy this limitation. However, claim 26 also requires “a layer of cholesteric liquid crystal material disposed between a pair of *unpatterned* conductors” (emphasis added). Yang clearly discloses that the electrodes are “arrays of electrodes coupled to a circuit” (col. 8, lines 19-20) and “electrodes 162 and 182a, 182b coated as lines onto the substrates” (col. 8, lines 64-65), which are not the same as “a pair of unpatterned conductors.” Thus, Yang fails to teach or suggest a “means for applying a first voltage to the conductors.”

Yang also fails to teach or suggest a “means for exposing the liquid crystal display to the image wise pattern of light.” Yang further fails to teach or suggest ““a light absorbing layer for forming an image wise thermal pattern in response to an image wise pattern of light.”

Thus, Applicants respectfully submit that claim 26 is patentable over Kahn in view of Yang. Claims 28-29 are patentable over Kahn in view of Yang, at least by their dependency on claim 26 for the same reasons as outlined above.

Claims 2-4, 17-19 and 27

Claims 2-4, 17-19 and 27 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Kahn in view of Yang and further in view of U.S. Patent Application No. 2002/0005827 to Kobayashi (“Kobayashi”). Applicants respectfully submits that these claims are patentable over Kahn in view of Yang and Kobayashi.

Claims 2-4, 17-19

As discussed above, Kahn fails to teach or suggest “applying a first voltage to the conductors” as recited in claim 1. Also as discussed above, Kahn fails to teach or suggest “exposing the liquid crystal display to the image wise pattern of light” as recited in claim 1. Further as discussed above, Kahn fails to teach or suggest “a light absorbing layer for forming an image wise thermal pattern in response to an image wise pattern of light.”

As discussed above, Yang fails to cure the deficiencies of Kahn with respect to claim 1. Kobayashi likewise fails to cure the deficiencies of Kahn with respect to claim 1.

Thus, Applicants respectfully submit that claims 2-4, 17-19 are patentable over Kahn in view of Yang and Kobayashi, at least by their dependency on claim 1.

Claim 27

As discussed above, Kahn fails to teach or suggest a “means for applying a first voltage to the conductors” as recited in claim 26. Also as discussed above, Kahn fails to teach or suggest a “means for exposing the liquid crystal display to the image wise pattern of light” as recited in claim 26. Further as discussed above, Kahn fails to teach or suggest “a light absorbing layer for forming an image wise thermal pattern in response to an image wise pattern of light.”

As discussed above, Yang fails to cure the deficiencies of Kahn with respect to claim 26. Kobayashi likewise fails to cure the deficiencies of Kahn with respect to claim 26.

Thus, Applicants respectfully submit that claims 27 is patentable over Kahn in view of Yang and Kobayashi, at least by its dependency on claim 26.

Claims 20-21

Claims 20-21 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Kahn in view of Yang and further in view of U.S. Patent No. 5,357,356 to Konuma (“Konuma”). Applicants respectfully submits that these claims are patentable over Kahn in view of Yang and Konuma.

As discussed above, Kahn fails to teach or suggest “applying a first voltage to the conductors” as recited in claim 1. Also as discussed above, Kahn fails to teach or suggest “exposing the liquid crystal display to the image wise pattern of light” as recited in claim 1. Further as discussed above, Kahn fails to teach or suggest “a light absorbing layer for forming an image wise thermal pattern in response to an image wise pattern of light.”

As discussed above, Yang fails to cure the deficiencies of Kahn with respect to claim 1. Konuma likewise fails to cure the deficiencies of Kahn with respect to claim 1.

Thus, Applicants respectfully submit that claims 20-21 are patentable over Kahn in view of Yang and Konuma, at least by their dependency on claim 1.

Claims 22-25

Claims 22-25 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Kahn in view of Yang and further in view of U.S. Patent Application No. 2003/0206147 to Mi et al. (“Mi”). Applicants respectfully submits that these claims are patentable over Kahn in view of Yang and Mi.

As discussed above, Kahn fails to teach or suggest “applying a first voltage to the conductors” as recited in claim 1. Also as discussed above, Kahn fails to teach or suggest “exposing the liquid crystal display to the image wise pattern of light” as recited in claim 1. Further as discussed above, Kahn fails to teach or suggest “a light absorbing layer for forming an image wise thermal pattern in response to an image wise pattern of light.”

As discussed above, Yang fails to cure the deficiencies of Kahn with respect to claim 1. Mi likewise fails to cure the deficiencies of Kahn with respect to claim 1.

Thus, Applicants respectfully submit that claims 22-25 are patentable over Kahn in view of Yang and Mi, at least by their dependency on claim 1.

CONCLUSION

Based on the foregoing, Applicants respectfully submit that all pending claims in the present application are in condition for allowance and respectfully requests withdrawal of the outstanding rejection the issuance of a formal Notice of Allowance at an early date.

Applicants thank the Examiner for carefully examining the present application and considering this response and if a telephone conference would facilitate the prosecution of this application, the Examiner is invited to contact Applicants' attorney at the number listed below.

Respectfully submitted,

(Date)

By: _____

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